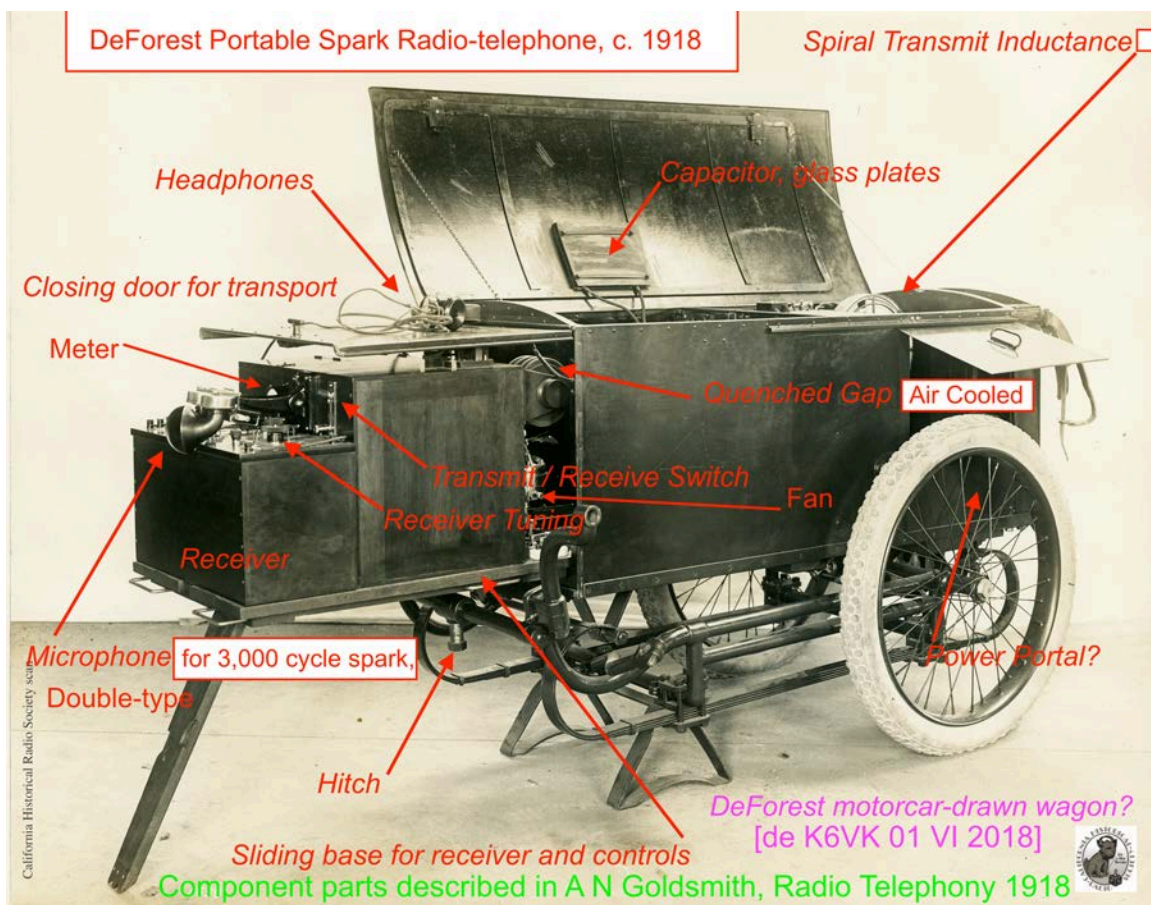


# The DeForest Wireless Wagon, Resolved

By Bart Lee, K6VK, a CHRS Fellow in History

Deputy Archivist Bob Ryzdewski found the photo of a DeForest portable wireless set. We have speculated about it but Bob's further research means we can say with some certainty what its DeForest components are. Other research tells us more, particularly A. N. Goldsmith, WIRELESS TELEPHONY (1918).

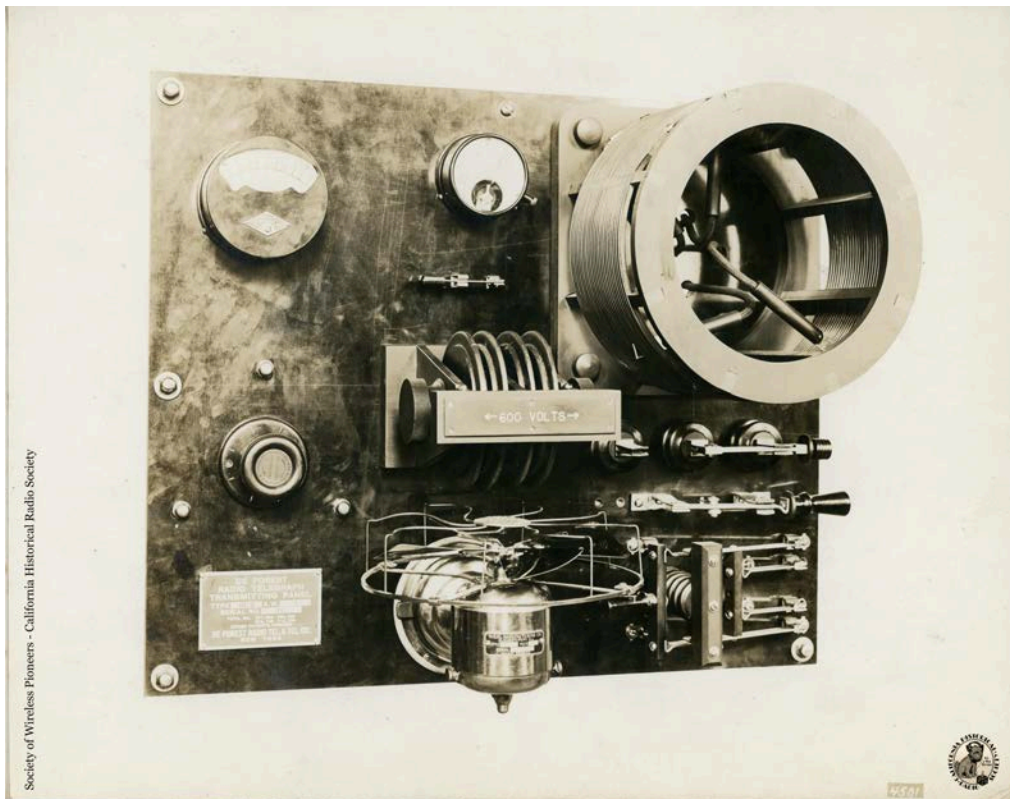


This portable transceiver uses a spark technology, not arc and not vacuum tube. Likely for reasons of reliability,

de Forest reverted to spark. But the spark inductance interrupter operated at 3,000 cycles. The inductance's very high output voltage oscillated at this frequency, higher than the human voice. This then went to the quenched spark gap.

This spark gap created the radio frequency energy of the set. The surrounding tuning circuits (and the antenna) determined the frequency emitted. This energy was very close to a continuous wave because of the frequency of interruption.

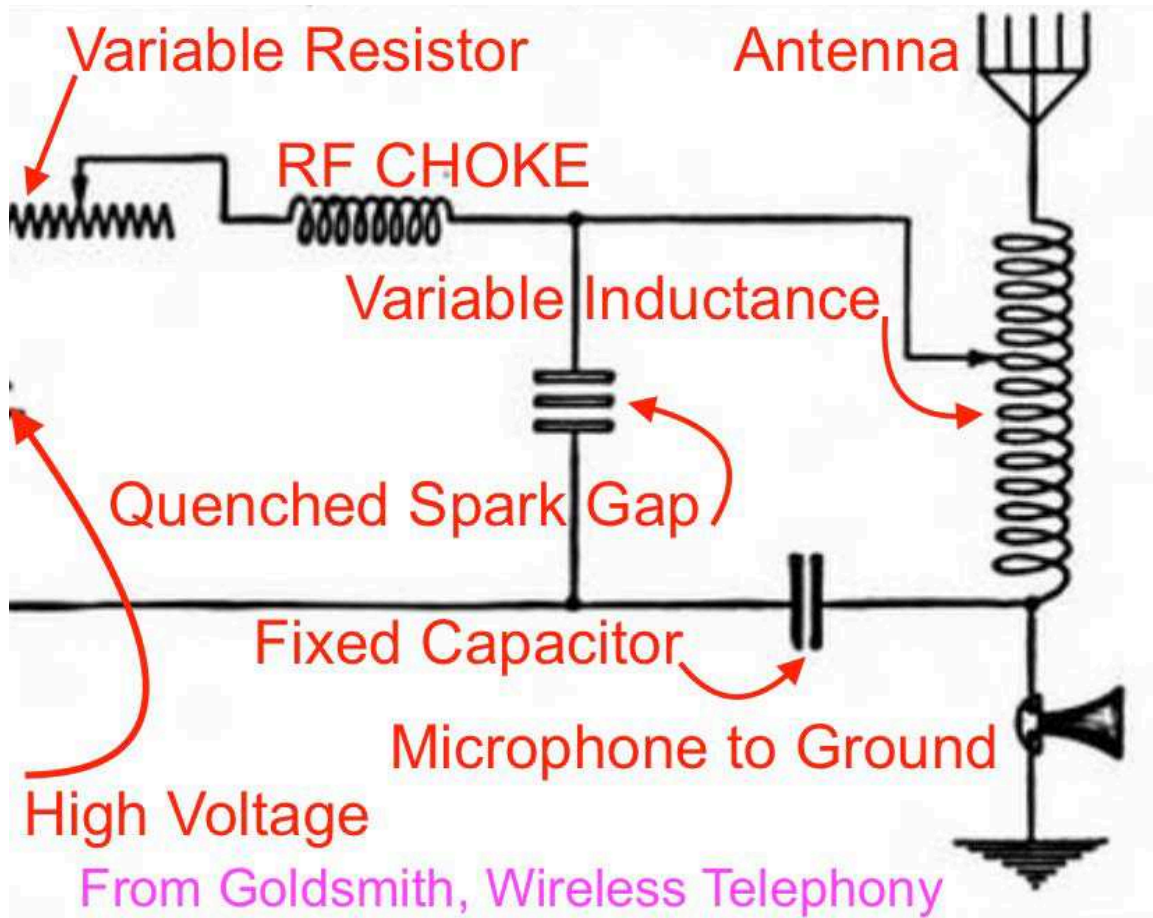
After finding the wagon, Bob then found the following photo in the Society of Wireless Pioneers archives:



This is an air-cooled one-kilowatt quenched gap transmitter that DeForest offered for sale. The fan blows air through the gap. This transmitter's nomenclature plaque appears below (inverted):

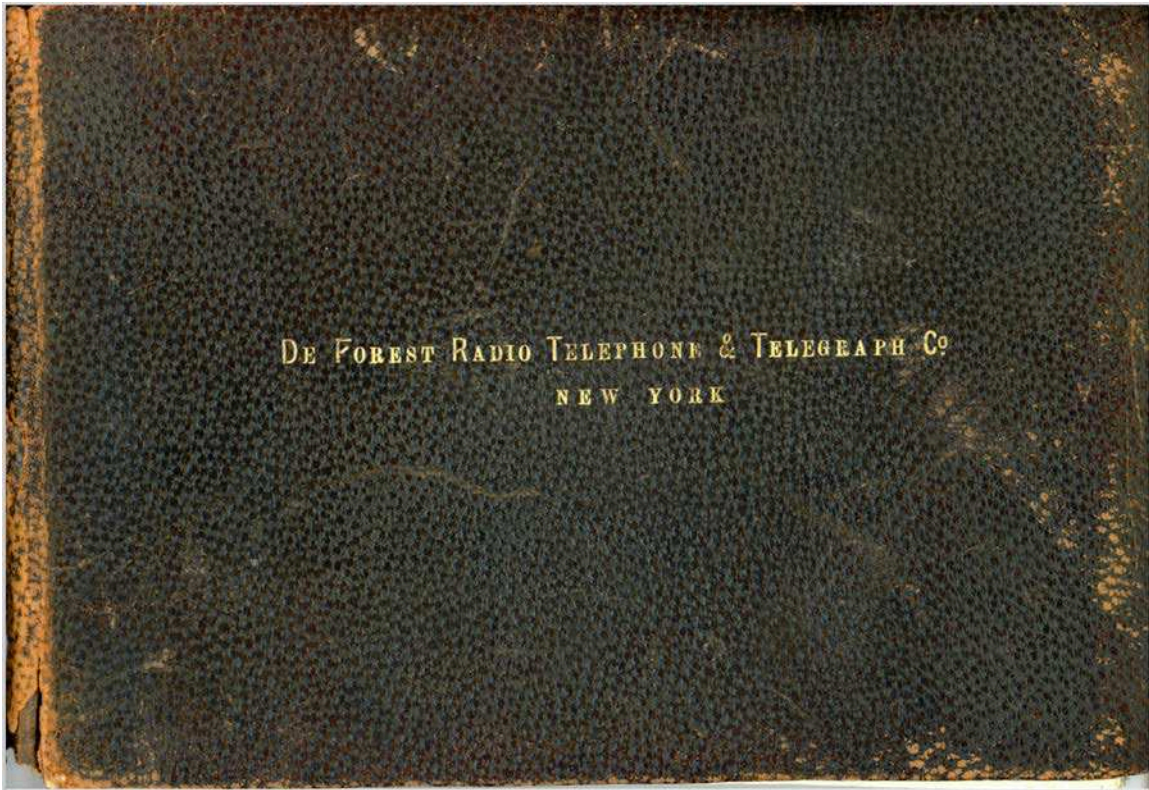


De Forest wanted to transmit voice, to send speech. To modulate the RF output, de Forest put a carbon microphone into the ground lead. This modulated the radio frequency energy (RF) from the quenched gap with the audio of the speech into the microphone. This was a standard technique in arc transmitters, with which de Forest had worked as early as 1907.



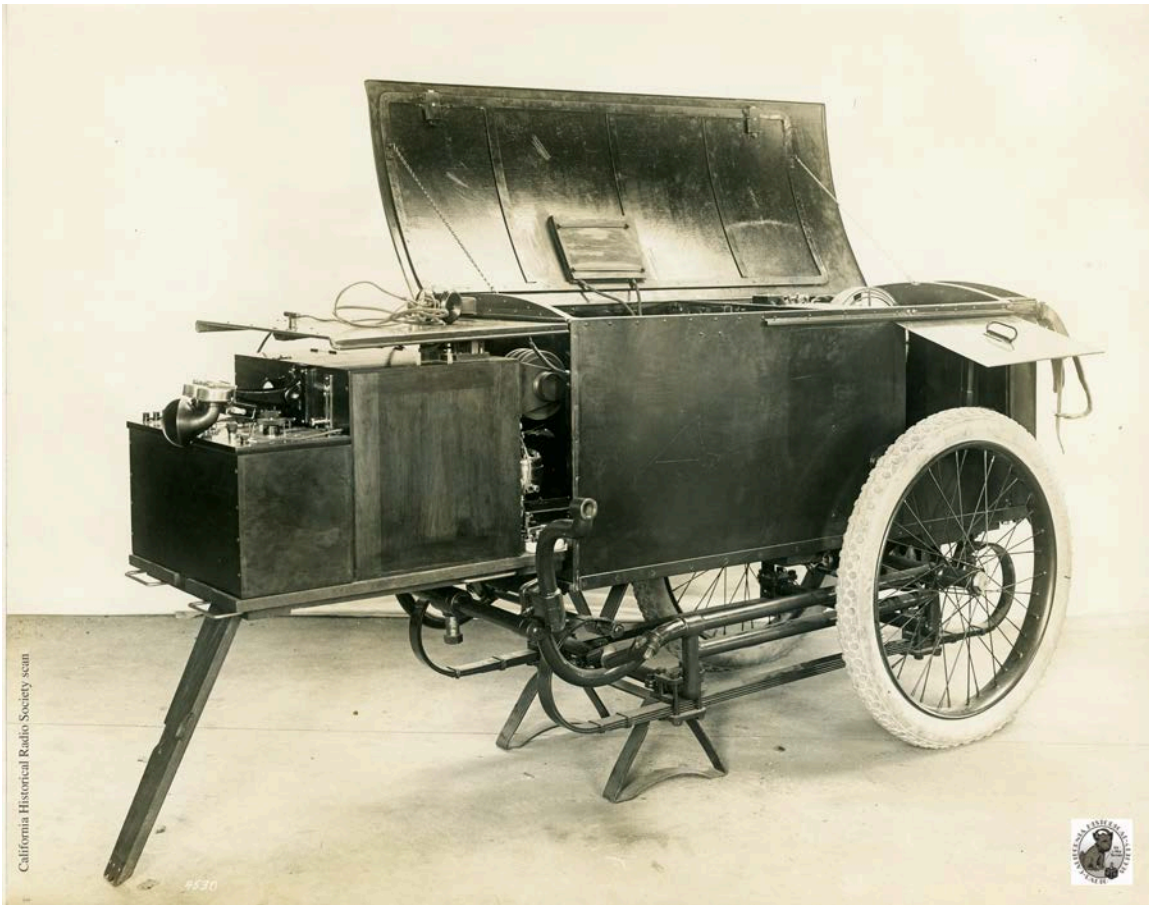
The company, the DE FOREST TELEPHONE & TELEGRAPH CO. New York, made its offerings in a leather bound catalog of photographs and drawings from photos (for reproduction). Bob found this catalog in the archives. It offered this transmitter for sale in the same catalog as the otherwise un-described wagon. The transmitter and receiver in the wagon appear as the last page. The portable wagon transmitter looks to be using the same type of components as DeForest's DQC transmitter above.

The catalog presents many professional photographs of some transmitters but mostly receivers. Its cover appears below:



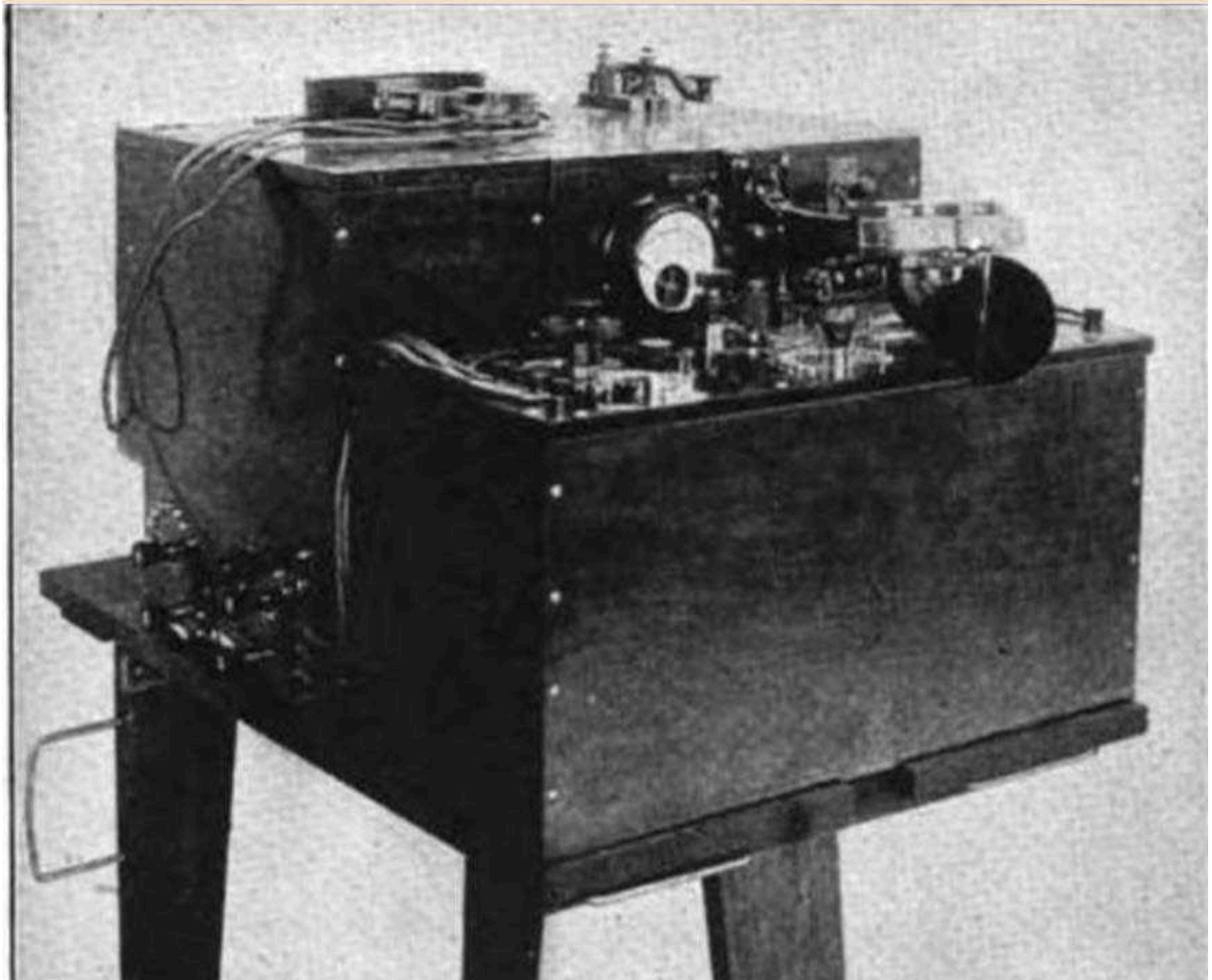
The archives of the Society of Wireless Pioneers provide a secure provenance for these images. Wireless scholar and pioneer Thorne Mayes sent the catalog to a principal of the Society of Wireless Pioneers, Henry Dickow, in 1968. In 1909 Dickow had formed the San Francisco Radio Club (still operating).

The image below is the un-annotated wireless wagon:



The receiver, and transmitter microphone, sit in the left front of the (extended) wagon, as do the controls.

Goldsmith's WIRELESS TELEPHONY provides a photograph, identified as the "DeForest portable Radiophone set":



DeForest portable Radiophone set, from RADIO TELEPHONY by Alfred Norton Goldsmith fig 62 p 67ff (1918)

Goldsmith writes about some of the components of the wireless wagon, but not the wagon itself:

“[Lee de Forest] has worked with several types of radio-frequent [sic] spark radiophone transmitters, and two of these types will be here described.

“The first of these is a moderately high voltage, direct current system. The wiring diagram is given in Figure 60 [partially reproduced and annotated in this note]. As will be seen, a 1,000-volt, direct-current generator supplied a two-section quenching gap through a regulating resistance and choke coil. The gap itself is made of parallel studs of tungsten in air, with minute but regulable separation. Shunted around the gap is an oscillating circuit which is directly coupled to the antenna. Two heavy current microphones (sometimes air cooled by a blower) are connected in series in the ground lead of the antenna. \*\*\*

“The antenna ammeter is shown mounted on the upper left-hand portion of the apparatus box which contains the primary condenser, inductances, choke coils, and antenna switch. This sending-to-receiving transfer switch is controlled by the projecting knob on the upper right-hand portion of the apparatus box. The small 600-volt generator is shown separately. A 0.25-h.p. (200-watt [= ¼ horse power]) motor is recommended for driving the generator. The range is given as from 7 to 15 miles (10 to 25 km.). The set, as designed, operates at wave-length from 400 to 1,000 meters.

“A portable type of radiophone is shown, set up, in Figure 62. It will be seen that the double microphone transmitter is used in the set in question. The receiving set is seen at the left and toward the back of the instrument case. \*\*\* The antenna switch and direct coupling coil are mounted to the right of the panel. When used for radio telephony, an air-cooled, twin-microphone transmitter is mounted on the panel, usually under the supply circuit ammeter.”

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It is not apparent just to what sort of company or institution Lee de Forest thought he might sell this portable set. It would have been well suited to replace the U.S Army portable spark sets of the First World War. It very likely out-performed them. Perhaps it should be known as the DeForest Would-be Wireless War Wagon...

Your CHRS archivists are very happy to have unearthed this lost fragment of radio history. (de K6VK {v3; 25 VI 18})

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